National Institute of Environmental Health Sciences

Clinical biochemistry of hyperthermia

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Abstract:

Heatstroke is the most severe form of heat-related disorders that include mild heat intolerance, heat exhaustion and heat stress. The incidence of heat-related disorders is increasing due to several factors that include climate change, co-morbidities and drug usage. Patients with heatstroke present with a core body temperature above 40 degrees C, multiorgan dysfunction and central nervous system disorder. The pathogenesis of heatstroke is not fully understood; however, heat-shock proteins, inflammatory cytokines and their modulators have been implicated. The clinical biochemistry laboratory plays an important role in the management of patients with heatstroke. Biochemical findings in patients with heatstroke include elevated urea, creatinine, cardiac and skeletal muscle enzymes, myoglobin and troponin. There is also biochemical evidence of metabolic acidosis, respiratory alkalosis, hepatic injury with elevated enzyme levels as well as abnormal hematological and coagulation indices. This review article aims at increasing awareness of the biochemical changes seen in patients with heatstroke and their possible role in prognosis and in elucidating the pathogenesis of heatstroke.

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Resource Description

Exposure : ☒

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature: ☒

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☒

resource focuses on specific location

Global or Unspecified

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Injury

Medical Community Engagement: ☑

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Elderly, Workers

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Time Scale Unspecified